

What is claimed is:

1. A cardiac rhythm management device, comprising:
 - a plurality of sensing channels, each such channel comprising an electrode
 - 5 connected to a sense amplifier for sensing cardiac electrical activity;
 - a plurality of pacing channels, each such channel comprising an electrode
 - connected to a pulse generator for delivering pacing pulses to a heart chamber;
 - a controller for controlling the delivery of pacing pulses and for receiving data
 - from the sensing channels;
 - 10 wherein the controller is programmed to:
 - pace both ventricles in accordance with a ventricular resynchronization pacing
 - mode; and,
 - store data received from one or more selected sensing channels in a memory
 - upon detection of a triggering condition indicating degradation of resynchronization
 - 15 therapy.
2. The device of claim 1 wherein the stored data is an electrogram from the selected sensing channel.
- 20 3. The device of claim 1 wherein the stored data is marker/interval data reflecting sensing and pacing events in the selected sensing channel and time intervals therebetween.
4. The device of claim 1 wherein the triggering condition is when the percent of
- 25 paced cycles over a specified period of time in either or both ventricles has dropped below a specified threshold value.

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5. The device of claim 1 wherein the triggering condition is when the percent of paced cycles over a specified period of time in either or both ventricles has dropped below a specified threshold value within a particular rate range.

5 6. The device of claim 1 wherein the triggering condition is when the number of consecutive intrinsic beats has exceeded a specified threshold value.

7. The device of claim 1 wherein the triggering condition is when the number of times a pace has been inhibited by a synchronized-chamber protective period within a specified time interval has exceeded a specified limit value.

8. The device of claim 1 wherein the triggering condition is when the number of triggered paces in a specified time interval has exceeded a specified limit value.

15 9. The device of claim 1 wherein the controller is programmed to periodically measure the intrinsic PR interval by detecting the time interval between atrial and ventricular senses during unpaced beats, and wherein the triggering condition is when the measured PR interval has deviated a defined percentage from a previously measured intrinsic PR interval.

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10. The device of claim 1 wherein the particular sensing channel from which data is to be stored and whether the data is to be stored as an electrogram or marker/interval data depends upon detection of a particular triggering condition.

25 11. The device of claim 1 wherein data received from one or more selected sensing channels during a specified time immediately preceding detection of a triggering condition is stored in a memory upon detection of the triggering condition.

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12. The device of claim 1 wherein the triggering condition is when the delivered therapy is inconsistent with the programmed cardiac resynchronization therapy.

13. The device of claim 1 wherein the triggering condition is stored in a memory
5 upon its detection.

14. The device of claim 1 wherein statistical data regarding the triggering parameter is stored in a memory upon detection of a triggering condition.

10 15. The device of claim 1 wherein additional data regarding the physical condition of a patient in whom the device is implanted is stored in a memory upon detection of a triggering condition.

15 16. A method for operating a cardiac rhythm management device, comprising:
sensing cardiac electrical activity via a plurality of sensing channels;
outputting pacing pulses through plurality of pacing channels in order to pace both ventricles in accordance with a cardiac resynchronization pacing mode; and,
storing data received from one or more selected sensing channels in a memory upon detection of a triggering condition indicating degradation of resynchronization
20 therapy.

17. The method of claim 16 wherein the stored data is an electrogram from the selected sensing channel.

25 18. The method of claim 16 wherein the stored data is marker/interval data reflecting sensing and pacing events in the selected sensing channel and time intervals therebetween.

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19. The method of claim 16 wherein the triggering condition is when the percent of paced cycles over a specified period of time in either or both ventricles has dropped below a specified threshold value.

5 20. The method of claim 16 wherein the triggering condition is when the percent of paced cycles over a specified period of time in either or both ventricles has dropped below a specified threshold value within a particular rate range.

21. The method of claim 16 wherein the triggering condition is when the number of
10 consecutive intrinsic beats has exceeded a specified threshold value.

22. The method of claim 16 wherein the triggering condition is when the number of times a pace has been inhibited by a synchronized-chamber protective period within a specified time interval has exceeded a specified limit value.
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23. The method of claim 16 wherein the triggering condition is when the number of triggered paces in a specified time interval has exceeded a specified limit value.

24. The method of claim 16 further comprising periodically measuring the intrinsic
20 PR interval by detecting the time interval between atrial and ventricular senses during unpaced beats, and wherein the triggering condition is when the measured PR interval has deviated a defined percentage from a previously measured intrinsic PR interval.

25. The method of claim 16 wherein the particular sensing channel from which data
25 is to be stored and whether the data is to be stored as an electrogram or marker/interval data depends upon detection of a particular triggering condition.

26. The method of claim 16 further comprising, upon detection of a triggering condition, storing in memory data received from one or more selected sensing channels during a specified time immediately preceding detection of the triggering condition.

5 27. The method of claim 16 wherein the triggering condition is when the delivered therapy is inconsistent with the programmed cardiac resynchronization therapy.

28. The method of claim 16 further comprising storing the triggering condition in a memory upon its detection.

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29. The method of claim 16 further comprising storing statistical data regarding the triggering parameter in a memory upon detection of a triggering condition.

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30. The method of claim 16 further comprising storing additional data regarding the physical condition of a patient in whom the device is implanted in a memory upon detection of a triggering condition.

31. The device of claim 1 wherein the data is stored for a specified storage time upon detection of a triggering condition.

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32. The method of claim 16 wherein the data is stored for a specified storage time upon detection of a triggering condition.

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33. The device of claim 1 wherein storage of data upon detection of a triggering condition is inhibited if a pathological condition is also detected.

34. The method of claim 1 further comprising inhibiting storage of data upon detection of a triggering condition if a pathological condition is also detected.

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